

ABSTRACT

A method and apparatus for fractionation of charged macro-molecules such as DNA is provided. DNA solution is loaded into a matrix including an array of obstacles. An alternating electric field having two different fields at different orientations is applied. The alternating electric field is asymmetric in that one field is stronger in duration or intensity than the other field, or is otherwise asymmetric. The DNA molecules are thereby fractionated according to size and are driven to a far side of the matrix where the fractionated DNA is recovered. The fractionating electric field can be used to load and recover the DNA to operate the process continuously.

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